REMARKS

Claims 45 and 46 have been cancelled. Claims 1-44, and 47-49 are now pending in the application. Claims 1, 3, 5, 6, 7, 9, 11, 12, 13, 14, 15, 16, 17, 19, 20, 21, 22, 24, 25, 26, 27, 28, 30, 31, 32, 33, 34, 35, 36, 37, 40, 41, 42, 43, 44, 47, 48, and 49 have been amended. No new matter has been added by amendment. Reexamination and reconsideration of the claims as amended are respectfully requested.

Specification-Objections

2.) In the Office Action dated July 15, 2002 the Examiner objects to the disclosure because on page 40 there is no indication of the ATCC Accession number. The Applicant has amended the specification to include the ATCC Accession number for PH0GC.

Claims- Objections

3.) In the Office Action dated July 15, 2002 the Examiner objects to claims 1, 6, 21, 25, 37, and 40 because the ATCC Accession number has been left blank. Claims 1, 6, 21, 25, 37, and 40 have been amended by deleting the blank spaces and inserting the ATCC deposit number. The specification has also been amended to include the terms of the deposit for PH0GC. A copy of the ATCC deposit receipt is included in this response. These actions obviate the objection and place claims 1, 6, 21, 25, 37, and 40 in condition for allowance.

The Examiner objects to claims 5 and 24 indicating that the phrase "A tissue culture should read --The tissue culture--. Claims 5 and 24 have been so amended.

Claim Rejections – 35 USC § 112 second paragraph

4.) The Examiner rejects claims 1-49 under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5.) The Examiner states that, Claims 1-49 are indefinite because the designation 'PH0GC' does not denote an art recognized designation of a maize plant and hence does not state the metes and bounds of the claimed invention." Applicant has amended

the specification and the appropriate claims with the ATCC Accession number thus obviating the rejection.

The Examiner has rejected claim 3 for being indefinite and has suggested that amending the claim to replace the phrase "is male sterile" with –further comprises a genetic factor conferring male sterility-- would obviate the rejection. Claim 3 has been so amended.

The Examiner has rejected claims 5 and 24, because of the phrase "the cells or protoplasts being from a tissue". The Examiner states that the phrase is indefinite because it is unclear as to the metes and bounds of "being from" and the term "protoplasts" lacks proper antecedent basis. Claims 5 and 24 have been amended and now read, "The tissue culture according to claim 4 [23], cells or protoplasts of the tissue culture having been isolated from a tissue selected from the group consisting of leaves, pollen, embryos, roots, root tips, anthers, silks, flowers, kernels, ears, cobs, husks, and stalks." Cells or protoplasts are inherent features of the tissue culture. See MPEP 2173.05(e). The amendments now place claims 5 and 24 in condition for allowance.

Examiner rejects claim 6 and states that, "the phrase 'capable of expressing' is indefinite and does not state a positive feature of the regenerated plants, the phrase should read --that expresses--. Applicant disagrees with the examiner. The use of the phrase "capable of expressing" is definite. Applicant points out that plants regenerated from tissue culture may be stunted and have other changes in growth habit, but once the PH0GC regenerated plant is self-pollinated and the seed is grown under normal growing conditions, the plant will again express the same traits as PH0GC. Applicant requests that the Examiner reconsider his rejection to claim 6.

Examiner rejects claims 14, 33, 41, 45, and 46 because of such phrases as "very early flowering" and "good flint grain texture" are relative and do not state the metes and bounds of the claimed invention. Applicant has amended claims 14, 33, and 41 in part by removing such terms as indicated by the Examiner. Applicant has cancelled claims 45 and 46. Applicant has amended claim 14 to read, "A maize plant, or parts thereof, wherein at least one ancestor of said maize plant is the maize plant of claim 2, said maize plant expressing a combination of at least two PH0GC traits which are not significantly different from PH0GC traits when determined at the 5% significance level and when grown in the same environmental conditions, said PH0GC traits selected from the group consisting of: a relative maturity of 70 based on the Comparative Relative Maturity Rating System for harvest moisture of grain, flowering time, flint grain texture,

and adapted to Northern Alberta, Canada, Northern Saskatchewan, Canada, Northern Russia, and Siberia; and wherein said at least two PH0GC traits were not exhibited by other plants utilized in the development of said maize plant." Applicant points out that claim 14 has been amended to clearly define the traits of PH0GC that could be found in a maize plant produced from PH0GC. Applicant has amended the claim using the term "not significantly different from PH0GC traits when determined at a 5% significance level..." as a definitive term. In the specification pages 37-39, the tables show mean trait values. The standards against which the listed traits should be compared are the mean values for those traits exhibited by PH0GC or a maize plant produced from PH0GC in a side-by-side comparison or other similar environmental conditions. For example, on page 37, Table 2, of the specification it shows that PH0GC demonstrates significantly less growing degree units to pollen shed and silking (flowering) when compared to PH36E. The Applicant would also like to point out that one of ordinary skill in the art of plant breeding would know how to evaluate the traits of two inbred maize lines to determine if they are not significantly different to a 5% significance level in the expression of a given trait. On pages 275-276 in Principles of Cultivar Development (1987) Fehr writes "Two or more independent comparisons of lines in a test provide a means of estimating whether variation in performance among lines is due to differences in genetic potential or to environmental variation." A copy of Fehr, pages 261-286, is attached to this Amendment and Request for Reconsideration as Appendix A. As was done by the Applicant in the specification, mean trait values would be used to determine whether the trait differences are significant. Further, the claims, as amended, require that the traits be measured on plants grown in the same environmental conditions. These amendments obviate the rejection.

The Examiner states that claims 15 and 34 are indefinite because they do not set forth any positive method steps leading to the maize plant. Applicant has amended claims 15 and 34. The claims now read, "A method for developing a PH0GC-derived maize plant, or parts thereof, in a maize plant breeding program using plant breeding techniques comprising: a) obtaining the maize plant, or its parts, of claim 2; b) crossing said maize plant to a different plant; and c) growing the seed produced to obtain a PH0GC-derived maize plant, or parts thereof." The claims now clearly set forth positive steps. The claims as amended obviate the Examiner's rejection. Claims 16,17, 35, and 36, that depend from claims 15 and 34 have been amended to reflect the changes made in claims 15 and 34.

The Examiner states that claims 16 and 35 are indefinite in their recitation of "maize plant breeding program" since the claims to which they depend are drawn to methods rather than breeding programs. Claims 16 and 35 have been amended to refer to the method and therefore are in condition for allowance.

The Examiner rejects claims 19 and 20 because the claims are directed to a single gene conversion while the claim to which they depend is drawn to maize plants. Claims 19 and 20 have been amended and now read, "The maize plant of claim 18, wherein the single gene conversion is a ...." Claims 19 and 20 as amended are now in condition for allowance.

The Examiner has rejected claim 22 for being indefinite and has suggested that amending the claim to replace the phrase "is male sterile" with –further comprises a genetic factor conferring male sterility-- would obviate the rejection. Claim 22 has been so amended thus obviating the rejection.

The Examiner states, "At claims 40-46, the phrase 'derived maize plant' is indefinite because it is unclear what the metes and bounds of the limitation 'derived' are. In addition, it is unclear what the metes and bounds of the phrase 'further derived' at claim 43 or the phrase 'derived progeny' at claim 44 are." Applicant disagrees with the Examiner. As noted previously, claims 45 and 46 have been cancelled. Claims 40, 41, and 42 clearly set forth the steps describing the limitations of the claims. The terms "PH0GC-derived maize plant" and "further PH0GC-derived maize plants" are definitive and provide a means for proper antecedent basis. Claim 43 has been amended so that there is proper antecedent basis. In claim 44 the term "derive progeny" has been deleted. The Examiner goes on to state in the next paragraph, "Claim 44 is indefinite because it is unclear where in the method of claim 40 plant tissue culture methods are utilized...." Applicant has amended claim 44 for clarification purposes. Claim 44 now reads, "The method of claim 40, still further comprising utilizing plant tissue culture at step (b) to regenerate said PH0GC-derived maize plant." Applicant requests that the Examiner reconsider his rejection to claims 40-44.

The Examiner rejects claims 48 and 49 because the claims are directed to a single gene conversion while the claim to which they depend is drawn to maize plants. Claims 48 and 49 have been amended and now read, "The maize plant of claim 47, wherein the single gene conversion is a ...." Claims 48 and 49 as amended are now in condition for allowance.

The Applicant has amended claims 11, 12, and 13 and claims 30, 31, and 32 for clarification purposes.

Claim Rejections – 35 USC § 112, first paragraph

7.) The Examiner states, "Claims 9-11, 13, 14, 17-20, 28-30, 32, 33, 36, 41, 43, and 45-49 under 35 USC § 112, first paragraph as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention."

The Examiner rejects claims 9 and 10, which claim the F1 hybrid made with PH0GC. Applicant notes that a claim to the F1 hybrid made with a deposited inbred was expressly acknowledged without reservation by the United States Supreme Court In *J.E.M. Ag. Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc.*, 60 USPQ 2d 1865,1873 (S.Ct. 2001), when the Supreme Court wrote, "...a utility patent on an inbred plant line protects the line as well as all hybrids produced by crossing that inbred with another plant line."

The Examiner goes on to state, "The claimed invention lacks written description under current written description guidelines. The claims are drawn to maize progeny plants and transgenic maize plants having undisclosed identifying characteristics whereby only the characteristics of the deposited maize line PH0GC are known. There are insufficient identifying characteristics to allow one skilled in the art to predictably determine the genomic structure or phenotypic characteristics of the plant obtained at each level of crossing or at each generation. In addition, at claims 11, 13, 18-20, 30, 32, and 47-49, the effect of transgenes and/or single gene conversions on the physiological and morphological characteristic of a transgenic PH0GC maize plant or progeny thereof, is not sufficiently described whereby one of skill in the art could recognize the claimed maize plant."

Applicant notes examples of traits and single gene conversions are given in the specification, page 21, lines 15-30, and page 22, line 34, thru page 33, line 4. Even if more than one trait is affected by the transgene, the genetics of PH0GC will be only minimally affected. The Examiner must consider all limitations of the claimed invention. While the Examiner is focusing on traits, the Applicant points out that they are not claiming so broadly as to claim any maize plant, regardless of source, comprising those traits. Applicant is claiming PH0GC, or a limited set of plants derived therefrom, that retain significant features of PH0GC. Applicant has made an enabling deposit of PH0GC with the ATCC, and the Applicant is seeking a fair scope of protection as the

quid pro quo for the teaching in the specification and the deposit of the material. The insertion of one or a few genes into a genome that is estimated to have between 50,000 to 80,000 genes (Xiaowu, Gai et al., Nucleic Acids Research, 2000, Vol. 28, No. 1, 94-96) is a minor change to PH0GC and will not prevent one of skill in the art from identifying the plant as PH0GC. To expedite prosecution of claims 30 and 47, Applicant has amended claims 30 and 47 to provide that the transgenic and single gene conversions of PH0GC are essentially unchanged from the corresponding plant or plant parts of PH0GC.

The Examiner goes on to comment that the breeding techniques of the claims "would result in a structurally and phenotypically different maize plant. Over an undetermined number of generations, the identifying characteristics of each generation become highly unpredictable, especially in view of the fact that none of the identifying characteristics of the progeny plants are disclosed in the specification."

Applicant has amended claims 17, 33 and 36 to limit the progeny covered to those within a pedigree distance of two crosses away from PH0GC. Claim 41 is limited to one cross away from PH0GC by virtue of dependency. Claim 42 has been amended resulting in the plant of claim 43 being limited to one cross away from PH0GC by virtue of dependency. Within the plant breeding arts, breeders use pedigree as a means to characterize lines in reference to their progenitors. To those of ordinary skill in the art, this indicates that a line fewer crosses away from a starting line will be, as a whole, more highly related to the starting line. Thus, the work of the original breeder in developing the starting line will be retained in the closely related progeny. More specifically, traits and linkage groups present in PH0GC will be retained in progeny that are within 2 outcrosses from PH0GC. Not only are pedigree descriptions used by breeders to evaluate materials for use in their breeding programs, but it is standard practice within the plant breeding industry for licensor's of inbred maize lines to retain a royalty from lines developed through the use of their inbreds. Those royalties are, in almost all cases, based on the pedigree relationship between the licensed inbred used in breeding and the progeny line being commercialized. In other words, pedigree is an identifying characteristic to those of ordinary skill in the art.

The Examiner also states that, "... one skilled in the art would not recognize from the disclosure that the Applicant was in possession of the claimed invention at the time of filing." Applicant notes that the mere fact that the progeny have not been created does not prevent them from being patented. As stated in MPEP 2163 (3) (a), "An

invention may be complete and ready for patenting before it has actually been reduced to practice." As stated in the written description guidelines "an applicant shows possession of the claimed invention by describing the claimed invention with all its limitations using such descriptive means as words, structures, figures, diagrams, and formulas that fully set forth the claimed invention. Possession may be shown in a variety of ways, including...by describing distinguishing identifying characteristics sufficient to show that the applicant was in possession of the claimed invention." (emphasis added). 1255 Official Gazette 140 (Feb. 5, 2002). Pedigree, which is a formula used by plant breeders, is a distinguishing identifying characteristic in compliance with the written description guidelines. Further, the Examiner must evaluate written description of the claimed invention with all of its limitations, including the limitation of being derived from PH0GC.

PH0GC-derived progeny are described by the fact that PH0GC is utilized in a breeding program to make the PH0GC-derived progeny, PH0GC gives genetic contribution to the PH0GC-derived progeny, and the genetics of PH0GC are described by ATCC deposit of PH0GC seed. By limiting the progeny to 2 or less crosses away from PH0GC, the Examiner's concern that the progeny may be only distantly related to PH0GC is addressed. In Enzo vs. Gen-Probe, U.S. State Court of Appeals for the Federal Circuit, 63 USPQ 2d 1609, the court reversed its prior decision regarding the insufficiency of the deposited genetic probes to meet the written description requirement. In so holding, the court stated, " As the deposited sequences are about 850, 8500, and 1300 nucleotides long, ..., there are at least hundreds of subsequences of the deposited sequences, an unknown number of which might also meet the claimed hybridization ratio. Moreover, Enzo's expert, Dr. Wetmur, stated that 'astronomical' numbers of mutated variations of the deposited sequence also fall within the scope of those claims, and that such broad claim scope is necessary to adequately protect Enzo's invention from copyists who could otherwise make minor change to the sequence and thereby avoid infringement while still exploiting the benefits of Enzo's invention. The defendants assert that such breadth is fatal to the adequacy of the written description. On the other hand, because the deposited sequences are described by virtue of a reference to their having been deposited, it may well be that various subsequences, mutations, and mixtures of those sequences are also described to one of skill in the art. We regard that question as an issue of fact...."

The issue of whether the progeny as now claimed satisfies the written description requirement is also an issue of fact. One of ordinary skill in the art would know if PH0GC were utilized in a breeding program by looking at the breeding records and therefore would know if a progeny were derived from PH0GC. PH0GC is a unique inbred, as evidenced by the morphological and physiological traits given in Table 1, pages 18-20, of the application. Routinely used molecular techniques as discussed on page 16, line 8, through page 17, line 2, of the Application can be used to verify whether PH0GC is within the pedigree of a line.

Applicant would also like to emphasize that PH0GC cannot be derived through any other means then through PH0GC seed and plant, nor can the influence of PH0GC on the progeny be removed from a line within 2 outcrosses of PH0GC. This fact highlights the different perspective between the Examiner and the Applicant regarding the scope of the claims. The Examiner believes the claims to progeny to be of great breadth. However, to view these claims as being of great breadth merely because a large number of plants could theoretically fall within its scope ignores an essential limitation of the claim; that only a plant developed through the use of PH0GC is within the scope of the claim. Such a plant could not be independently derived without the use of PH0GC, so the claim would not in any way restrict the work of a breeder that did not in fact use PH0GC. Compliance with the written description requirement is essentially a fact based inquiry that will "necessarily vary depending on the nature of the invention claimed." Vas-Cath v. Mahurkar, 935 F. 2d 1555 (citing In re DiLeone, 436 F2d. 1404, 1405). Thus, the compliance with the written description requirement must be judged in view of this limited scope of the progeny claims. As amended, the claims are drawn to only a limited scope of progeny, progeny which but for Applicant's creation of PH0GC could never have existed. This is in harmony with the statement in section 2163 of the MPEP that "the written description requirement promotes the progress of the useful arts by ensuring inventions are adequately described in the specification in exchange for the right to exclude." That quid pro quo of patent law has been met by the Applicant in the present case, and to use written description to deny adequate patent protection would be contrary to the stated purpose of the written description requirement.

Applicant points out that, to overcome the Examiner's rejection, claim 14 has been amended in a different manner. The Examiner argues that traits are relative terms, lacking a comparative basis, and do not adequately define or distinguish PH0GC

progeny maize plants. Applicant notes that Examiner's comments represent an abrupt and undocumented change of patent office policy. In numerous previous cases involving the protection of germplasm and progeny claims, including cases allowed after the recently adopted written description guidelines, the listing of traits was previously required by the patent office as a way to meet the written description requirement with respect to progeny. One reason for using traits as a means of description is because it was, and still is, technologically impossible to sequence the entire genome of a specific variety.

If it was possible to sequence the genome of a variety, PH0GC could be described and compared to the prior art to identify its unique genetic sequences and sequence combinations, and presumably, claims to progeny retaining those unique genetic aspects would be allowed by the patent office. This would be analagous to the way claims are examined for individual short genetic sequences and claims allowed for any plant comprising a specific transgene. Applicant asserts that the fact that technological tools do not exist to fully describe the unique characteristics of the full genome of PH0GC does not make the progeny lines derived therefrom any less entitled to adequate patent protection. It is the purpose of the patent law to protect new and useful processes, compositions of matter and improvements thereof, 35 USC 101.

This situation is somewhat analagous to Ex Parte Tanksley, 37 USPQ2d. 1382. In that case the Examiner desired that Tanksley claim according to sequence data to "better characterize the cDNA clones" and "facilitate a complete search of the prior art" and issued a 112 first paragraph written description rejection. The Board held that "the section 112 rejection amounts to a requirement...that the appellants amend their claims in a specified manner...We find no language in the statute or case law which would support that requirement." The Board, in treating the section 112 first paragraph rejection as a 112 second paragraph rejection, held that "In our judgement, a patent applicant is entitled to a reasonable degree of latitude in complying with the second paragraph of 35 U.S.C. 112 and the examiner may not dictate the literal terms of the claims for the stated purpose of facilitating a search of the prior art. Stated another way, a patent applicant must comply with 35 U.S.C. 112, second paragraph, but just how the applicant does so, within reason, is within applicant's discretion." Id. at 1386.

As stated earlier, claim 14 has been amended by removal of the terms such as "early" and "good" and the inclusion of "at least two PH0GC traits which are not significantly different from PH0GC traits when determined at the 5% significance level

and when grown in the same environmental conditions...." Such claim as amended, contains a comparative basis and adequately defines the PH0GC progeny maize plants.

Lastly, the Examiner notes that "neither the individual traits themselves, nor their degree of expression, appear to be unique to the deposited line PH0GC." Applicant points out that an inbred line such as PH0GC is useful for its unique combining ability to produce a hybrid, in addition to the traits it expresses as an inbred. Also, Applicant points out that the claims are not broadly drawn to any plants expressing those traits, but to a subset of the progeny of PH0GC that express those traits. The Examiner must evaluate written description of the claimed invention with all of its limitations, including the limitation of being derived from PH0GC.

In light of the amendments to the claims and the foregoing arguments the Applicant requests reconsideration of the rejection under the first paragraph of 35 U.S.C. 112.

8.) The Examiner rejects claims 12, 31, and 42 under 35 USC § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The Examiner states, "Because Applicant has failed to adequately describe the maize plants at claims 11, 30 and 41 the methods for producing a maize plant of the instant claims are not enabled. One skilled in the art would not know how to use a plant that has not been adequately described in a method of producing a maize plant, regardless of the technique used."

The Applicant disagrees with the Examiner. Applicant points out that the methods are fully described. The arguments of the Applicant as stated in section 7 apply, in that the arguments are directed in part to claims 11, 30, and 41. Furthermore, one of ordinary skill in the art would know if they were using or one could easily identify if they were using PH0GC, PH0GC further containing a transgene, and PH0GC further containing a single gene conversion to develop a hybrid. All F1 plants would have essentially the same genetic markers as the deposited PH0GC. It is well known to anyone skilled in the art that a hybrid has a genome with one set of the alleles from each inbred. Therefore the genetic profile exhibited in the deposit would be exhibited in the hybrid. As stated in the specification on page 16, lines 8-15, there are many laboratory based techniques available for the analysis comparison and characterization of plant genotype such as Restriction Length Polymorphisms (RFLPs) and Simple Sequence Repeats (SSRs). Such techniques have been known for some time and may

be used to identify whether or not PH0GC was used to develop a hybrid. Applicant also submits to the Examiner the journal article by Berry et al. (2002). This article discusses the probability of identifying the parents of the hybrid by SSR data when neither parent is known. A copy of article by Berry et al. is attached to this Amendment and Request for Reconsideration as Appendix B. The results of the experiment showed that using 100 SSR loci markers resulted in correct parental ranking of inbreds for 53 out of 54 hybrids. Applicant also points out that any breeder of ordinary skill in the art will know the identity of both parents used to produce a hybrid.

The genetic profile of PH0GC containing transgenes or single gene conversions would only differ for markers that are located at the transgene site of integration or at the single gene conversion location. The change of one to a few genes out of an estimated 50,000 to 80,000 genes is a minor change and will not prevent one of ordinary skill in the art from identifying the plant as PH0GC. One of ordinary skill in the art would also know how to cross PH0GC containing a transgene or single gene conversion with another plant to produce a hybrid. Thus, the Applicant has described the invention with sufficient specificity to enable others to make and use the invention. In light of the arguments and amendments, the Applicant requests that the Examiner withdraw his rejection to claims 12, 31, and 42.

REJECTIONS UNDER 35 U.S.C. § 102/103

11.) The Examiner rejects claims 9, 10, 14, 17, 28, 29, 33, 36, 41, 43, 45, and 46 under 35 U.S.C. § 102(b) as anticipated by or in the alternative, under 35 U.S.C. § 103(a) as obvious over Rietmann (US Patent 6,310,274).

The Examiner states, "Rietmann discloses an inbred maize line designated PH36E (see claim 1), which Applicant admits is comparable to the inbred maize line of the instant invention (see page 36, paragraph 4 of the instant application). Said PH36E inbred maize line inherently discloses such relative traits as "early flowering" and "good flint grain texture" (see for example, Table 2 of the instant specification). Applicant should also note that because the limitations set forth in the claims lack a comparative basis as set forth in the 112 second paragraph rejection above, these limitations are interpreted by the Office to be identical to those taught by Rietmann in the instant reference."

Applicant as noted previously terms such as "early" and "good" have been deleted from claims 14, 33, and 41. Claims 45 and 46 have been cancelled. Claim 14

has been amended to include the phrase "at least two PH0GC traits which are not significantly different from PH0GC traits when determined at the 5% significance level and when grown in the same environmental conditions...." On page 37, Table 2, of the application the data shows that PH0GC had significantly different early growth scores, growing degrees to pollen shed and silking, tassel size, and resistance to artificial brittle stalk than PH36E. Claim 14 as amended does not "lack a comparative basis". PH0GC is not PH36E nor is it a minor variation of PH36E as evidenced by the data set forth in the application. Claim 14 therefore does not read on the claims of the Rietmann patent.

The Examiner goes on to state, "The hybrid corn seed and hybrid maize plant of claims 9 and 10 would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention because, depending upon what second inbred maize plant one of skill in the art had selected, the resulting maize seed and progeny could be genetically, morphologically and physiologically indistinguishable from that of the instant claims." Applicant disagrees with the Examiner. The Applicant is claiming the method of making an F1 cross with PH0GC and the plant derived from that F1 cross. Any F1 cross made with PH0GC would be distinguishable from any other F1 cross made without having PH0GC as a parent. This is because the F1 would comprise the unique alleles of PH0GC. The hybrids would be distinguishable both through genetics and morphologically and physiologically because PH0GC is not PH36E, nor is PH0GC a minor or obvious derivative of PH36E. While it is impossible to determine the morphological and physiological traits of a hybrid made with PH0GC as a parent when the second parent is unknown, it is possible to determine when an F1 is made by the use of PH0GC through the use of genetics. The F1 hybrid claimed in the instant invention contains one complete set of alleles from the PH0GC genome. Therefore the set of markers exhibited in the PH0GC genetic profile would be present in the F1 hybrid. The use of molecular markers is pointed out in the specification (page 16, line 8, through page 17, line 2) and is known to one of ordinary skill in the art. Such techniques have been known for some time and may be used to identify whether or not PH0GC was used to develop a hybrid. Once again to further prove that it does not matter to what plant PH0GC is crossed in order to determine that it has been used to produce a hybrid, the Applicant submits to the Examiner the journal article by Berry et al. (2002). This article discusses the probability of identifying the parents of the hybrid when neither parent is known. A copy of article by Berry et al. is attached to this Amendment and Request for Reconsideration as Appendix B. Applicant also points out

that any breeder of ordinary skill in the art will know the identity of both parents used to produce a hybrid.

The Examiner goes on to state, "Similarly, the maize plant of claims 14, 33, and 36 and the F1 hybrid seed and plant of claims 28 and 29 would have been obvious in view of the teachings of the Rietmann reference. Applicant disagrees with the Examiner. Claims 14, 33, 36, 28, and 29 would not be obvious over Rietmann because once again PH0GC is not PH36E, nor is PH0GC a minor or obvious variation of PH36E. Claims 14, 33, 36, 28, and 29 all have the limitation that PH0GC has to be used to make the derived plants or stated differently each derived plant has to have PH0GC in the pedigree.

The Examiner goes on to state, "The PH0GC-derived corn plant of claims 41, 43, 45, and 46 would also be obvious in view of the Rietmann reference because again, depending upon what the second corn plant one of skill selects in producing said 'derived' corn plant, the resulting progeny could be genetically, physiologically and morphologicaly indistinguishable from that of the claimed PH0GC-derived corn plant, given the loss of PH0GC-derived genetic material with each outcross to a non-PH0GC parent. See In re Thorpe, 227 USPQ 964, 966 (Fed. Cir. 1985), which teaches that a product-by-process claim may be properly rejectable over prior art teaching the same product produced by a different process, if the process of making the product fails to distinguish the two products."

Applicant has amended claims 17 and 36 as follows, "A maize plant, or parts thereof, produced by the method of claim 15 (34) wherein the method comprises 2 or less crosses to a plant other than PH0GC or a plant that has PH0GC as a progenitor. " Claims 17 and 36, as well as claim 33, are now limited to a maize plant two crosses away from PH0GC. The MPEP section 2143.03 states, "If an independent claim is non-obvious under 35 USC 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q. 2d 1596 (Fed. Cir. 1988)." The MPEP section 2116.01 states, "All the limitations of a claim must be considered when weighing the differences between the claimed invention and the prior art in determining the obviousness of a process or method claim." See also In *re Ochai*, 71 F.3d 1565, 37 USPQ 2d 1127 (1995) and In *re Brouwer*, 77 F. 3d 422, 37 USPQ 2d 1663 (1996). Once again, because PH0GC is not PH36E nor is PH0GC obvious over PH36E then any plant derived through the use of PH0GC is non-obvious. Also of importance is that the claimed progeny of PH0GC cannot be obtained by any means other than by utilizing the

seed or plant of PH0GC. Once again these facts are not altered by the second corn plant, known or unknown.

Applicant has amended claims 41, 42, and 43. Claim 41 has been amended and now reads, "A PH0GC-derived maize plant, or parts thereof, produced by the method of claim 40." Claim 41 is now one cross away from PH0GC. Claim 41 clearly states that PH0GC must be used to obtain a PH0GC-derived maize plant. Claim 42 has been amended so that it does not allow any further crosses away from PH0GC. Thus claim 42 is the selfing of the plant derived by the one cross away from PH0GC made in claim 40. Claim 43 has been amended for clarification purposes. All PH0GC-derived plants are limited to one cross away from PH0GC and the derived plants are limited by the use of PH0GC in the initial cross. One would not be able to obtain plants within one cross of PH0GC through modification of the maize inbred taught by Rietmann because PH0GC comprises a unique and nonobvious combination of genetics. The claimed plants derived from PH0GC retain unique and nonobvious combinations of genetics derived from PH0GC. Thus, they deserve to be considered new and nonobvious compositions in their own right.

In light of the above, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection to claims 9, 10, 14, 17, 28, 29, 33, 36, 41, 43, 45, and 46 under 35 U.S.C. § 102(b) as anticipated by or in the alternative, under 35 U.S.C. § 103(a) as obvious over Rietmann (US Patent 6,310,274).

Cancellation of claims 45 and 46 and amendment of claims 1, 3, 5, 6, 11, 12, 13, 14, 15, 16, 17, 19, 20, 21, 22, 24, 25, 30, 31, 32, 33, 34, 35, 36, 37, 40, 41, 42, 43, 44, 48, and 49 does not in any way change the claim scope which the Applicant believes is allowable but is meant to hasten the issuance of the patent.

CONCLUSION

Attached hereto is a marked-up version of the changes made to the specification and claims by current amendment. The attached page is captioned "**VERSION WITH MARKINGS TO SHOW CHANGES MADE**".

Applicant submits that in light of the foregoing amendments and the remarks, the claims 1-44, and 47-49 are in condition for allowance. Reconsideration and early notice of allowability is respectfully requested. If it is felt that it would aid in prosecution, the Examiner is invited to contact the undersigned at the number indicated to discuss any outstanding issues.

Respectfully submitted,

SN:09/759,802

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the specification

On page 40, lines 2-21 have been deleted and the clean paragraph as written was inserted.

In the claims

Claims 45 and 46 were deleted.

Claims 1, 3, 5, 6, 7, 9, 11, 12, 13, 14, 15, 16, 17, 19, 20, 21, 22, 24, 25, 26, 27, 28, 30, 31, 32, 33, 34, 35, 36, 37, 40, 41, 42, 43, 44, 47, 48, and 49 were amended as follows:

1. (Amended) Seed of maize inbred line designated PH0GC, representative seed of said line having been deposited under ATCC Accession No. [_____] PTA-4523.

3. (Amended) The maize plant of claim 2, wherein said plant [is male sterile] further comprises a genetic factor conferring male sterility.

5. (Amended) [A] The tissue culture according to claim 4, [the] cells or protoplasts of the tissue culture having been isolated [being] from a tissue selected from the group consisting of leaves, pollen, embryos, roots, root tips, anthers, silks, flowers, kernels, ears, cobs, husks, and stalks.

6. (Amended) A maize plant regenerated from the tissue culture of claim 4, capable of expressing all the morphological and physiological characteristics of inbred line PH0GC, representative seed of which have been deposited under ATCC Accession No. [_____] PTA-4523.

7. (Amended) A method for producing a first generation (F_1) hybrid maize seed comprising crossing the plant of claim 2 with a different [inbred] parent maize plant and harvesting the resultant first generation (F_1) hybrid maize seed.

9. (Amended) An F_1 hybrid seed produced by crossing the [inbred] maize plant according to claim 2 with another, different maize plant.

11. (Amended) The maize plant, or parts thereof, of claim 2, wherein the plant or parts thereof [have been transformed so that its genetic material] contains one or more transgenes [operably linked to one or more regulatory elements].

12. (Amended) A method for producing a maize plant [that contains in its genetic material one or more transgenes,] comprising crossing the maize plant of claim 11 with [either] a second plant [of another maize line, or a non-transformed maize plant of the line PH0GC, so that the genetic material of the progeny that result from the cross contains the transgene(s) operably linked to a regulatory element].

13. (Amended) [Maize plants,] The maize plant, or parts thereof, produced by the method of claim 12.

14. (Amended) A maize plant, or parts thereof, wherein at least one ancestor of said maize plant is the maize plant of claim 2, said maize plant expressing a combination of at least two PH0GC traits which are not significantly different from PH0GC traits when determined at the 5% significance level and when grown in the same environmental conditions, said PH0GC traits selected from the group consisting of: a relative maturity of [approximately] 70 based on the Comparative Relative Maturity Rating System for harvest moisture of grain, [very early] flowering time, [good] flint grain texture, and adapted to Northern Alberta, Canada, Northern Saskatchewan, Canada, Northern Russia, and Siberia; and wherein said at least two PH0GC traits were not exhibited by other plants utilized in the development of said maize plant.

15. (Amended) A method for developing a PH0GC-derived maize plant, or parts thereof, in a maize plant breeding program using plant breeding techniques [, which include employing a maize plant, or its parts, as a source of plant breeding material,] comprising:

a) obtaining the maize plant, or its parts, of claim 2 [as a source of said breeding material] ;

b) crossing said maize plant to a different plant; and

c) growing the seed produced to obtain a PH0GC-derived maize plant, or parts thereof.

16. (Amended) The [maize plant breeding program] method of claim 15 wherein plant breeding techniques are selected from the group consisting of: recurrent selection, backcrossing, pedigree breeding, restriction fragment length polymorphism enhanced selection, and genetic marker enhanced selection [, and transformation].

17. (Amended) [A] The PH0GC-derived maize plant, or parts thereof, produced by the method of claim 15 wherein the method comprises 2 or less crosses to a plant other than PH0GC or a plant that has PH0GC as a progenitor.

19. (Amended) The [single gene conversion(s)] maize plant of claim 18, wherein the single gene conversion is a dominant allele.

20. (Amended) The [single gene conversion(s)] maize plant of claim 18, wherein the single gene conversion is a recessive allele.

21. (Amended) A maize plant, or parts thereof, having all the physiological and morphological characteristics of inbred line PH0GC, representative seed of said line having been deposited under ATCC accession No. [_____] PTA-4523.

22. (Amended) The maize plant of claim 21, wherein said plant [is male sterile] further comprises a genetic factor conferring male sterility.

24. (Amended) [A] The tissue culture according to claim 23, [the] cells or protoplasts of the tissue culture having been isolated [being] from a tissue selected from the group consisting of leaves, pollen, embryos, roots, root tips, anthers, silks, flowers, kernels, ears, cobs, husks, and stalks.

25. (Amended) A maize plant regenerated from the tissue culture of claim 23, capable of expressing all the morphological and physiological characteristics of inbred line PH0GC, representative seed of which have been deposited under ATCC Accession No. [_____] PTA-4523.

26. (Amended) A method for producing a first generation (F_1) hybrid maize seed comprising crossing the plant of claim 21 with a different [inbred] parent maize plant and harvesting the resultant first generation (F_1) hybrid maize seed.

27. (Amended) The method of claim 26 wherein the [inbred] maize plant of claim 21 is the female or male parent.

28. (Amended) An F_1 hybrid seed produced by crossing the [inbred] maize plant according to claim 21 with another, different maize plant.

30. (Amended) The maize plant, or parts thereof, of claim 21, wherein the plant or parts thereof [have been transformed so that its genetic material contains one or more transgenes operably linked to one or more regulatory elements] , further comprises one or more transgenes, and wherein the maize plant, or parts thereof, are essentially unchanged from the corresponding plant, or plant parts thereof, of inbred maize line PH0GC.

31. (Amended) A method for producing a maize plant [that contains in its genetic material one or more transgenes,] comprising crossing the maize plant of claim 30 with [either] a second plant [of another maize line, or a non-transformed maize plant of the line PH0GC, so that the genetic material of the progeny that result from the cross contains the transgene(s) operably linked to a regulatory element].

32. (Amended) [Maize plants,] The maize plant, or parts thereof, produced by the method of claim 31.

33. (Amended) A PH0GC-derived maize plant, or parts thereof, wherein at least one ancestor of said maize plant is the maize plant of claim [21] 2, and wherein the pedigree

of said PH0GC-derived maize plant is within 2 or less crosses to a plant other than PH0GC or a plant that has PH0GC as a progenitor [said maize plant expressing a combination of at least two PH0GC traits selected from the group consisting of: a relative maturity of approximately 70 based on the Comparative Relative Maturity Rating System for harvest moisture of grain, very early flowering, good flint grain texture, and adapted to Northern Alberta, Canada, Northern Saskatchewan, Canada, Northern Russia, and Siberia].

34. (Amended) A method for developing a PH0GC-derived maize plant, or parts thereof, in a maize plant breeding program using plant breeding techniques [, which include employing a maize plant, or its parts, as a source of plant breeding material,] comprising:

a) obtaining the maize plant, or its parts, of claim 21 [as a source of said breeding material] ;

b) crossing said maize plant to a different plant; and

c) growing the seed produced to obtain a PH0GC-derived maize plant, or parts thereof.

35. (Amended) The [maize plant breeding program] method of claim 34 wherein plant breeding techniques are selected from the group consisting of: recurrent selection, backcrossing, pedigree breeding, restriction fragment length polymorphism enhanced selection, and genetic marker enhanced selection[, and transformation].

36. (Amended) [A] The PH0GC-derived maize plant, or parts thereof, produced by the method of claim 34, wherein the method comprises 2 or less crosses to a plant other than PH0GC or a plant that has PH0GC as a progenitor.

37. (Amended) A process for producing inbred PH0GC, representative seed of which have been deposited under ATCC Accession No. [_____] PTA-4523, comprising:

(a) planting a collection of seed comprising seed of a hybrid, one of whose parents is inbred PH0GC said collection also comprising seed of said inbred;

(b) growing plants from said collection of seed;

(c) identifying said inbred PH0GC plants;

(d) selecting said inbred PH0GC plant; and

(e) controlling pollination in a manner which preserves the homozygosity of said inbred PH0GC plant.

40. (Amended) A method for producing a PH0GC-derived maize plant, comprising:

(a) crossing inbred maize line PH0GC, representative seed of said line having been deposited under ATCC Accession No. [_____] PTA-4523, with a second maize plant to yield progeny maize seed;

(b) growing said progeny maize seed, under plant growth conditions, to yield said PH0GC-derived maize plant.

41. (Amended) A PH0GC-derived maize plant, or parts thereof, produced by the method of claim 40 [, said PH0GC-derived maize plant expressing a combination of at least two PH0GC traits selected from the group consisting of : a relative maturity of approximately 70 based on the Comparative Relative Maturity Rating System for harvest moisture of grain, very early flowering, good flint grain texture, and adapted to Northern Alberta, Canada, Northern Saskatchewan, Canada, Northern Russia, and Siberia].

42. (Amended) The method of claim 40, further comprising:

(c) crossing said PH0GC-derived maize plant with itself [or another maize plant] to yield additional PH0GC-derived progeny maize seed;

(d) growing said progeny maize seed of step (c) under plant growth conditions, to yield additional PH0GC-derived maize plants;

(e) repeating the crossing and growing steps of (c) and (d)[from 0 to 5 times] to generate further PH0GC-derived maize plants.

43. (Amended) [A] The further [derived maize plant] PH0GC-derived maize plants, or parts thereof, produced by the method of claim 42.

44. (Amended) The method of claim 40, still further comprising utilizing plant tissue culture [methods to derive progeny of] at step (b) to regenerate said PH0GC-derived maize plant.

47. (Amended) The maize plants, or parts thereof, of claim 21, further comprising one or more single gene conversions, wherein the maize plant, or parts thereof, are essentially unchanged from the corresponding plant, or plant parts thereof, of inbred maize line PH0GC.

48. (Amended) The [single gene conversion(s)] maize plant of claim 47, wherein the single gene conversion is a dominant allele.

49. (Amended) The [single gene conversion(s)] maize plant of claim 47, wherein the single gene conversion is a recessive allele.